

WHAT IS CLAIMED IS:

1. A node in a packet communication system comprised of nodes and links, said node being a destination node as a destination of a packet transmitted from a correspondent node, said node comprising:

advertisement receiving means for receiving an advertisement of path information about a path from the correspondent node to the destination node;

Path MTU discovery execution determining means for determining whether a discovery of a Path MTU of the path from the correspondent node to the destination node should be executed, based on the path information;

Path MTU setting means for setting the Path MTU on the basis of the path information; and

Path MTU announcing means for announcing the Path MTU set by the Path MTU setting means.

2. A node in a packet communication system comprised of nodes and links, said node being a destination node as a destination of a packet transmitted from a correspondent node, said node comprising:

multiple tunnel entry-point advertisement receiving means for receiving an advertisement of information about an entry point of multiple tunnels on a path from the correspondent node to the destination

node;

Path MTU discovery execution determining means for determining whether a discovery of a Path MTU of the path from the correspondent node to the destination node should be executed, based on the number of entry points of multiple tunnels;

Path MTU calculating means for calculating the Path MTU on the basis of the number of entry points of multiple tunnels; and

Path MTU announcing means for announcing the Path MTU calculated by the Path MTU calculating means.

3. A node in a packet communication system comprised of nodes and links, said node being a destination node as a destination of a packet transmitted from a correspondent node, said node comprising:

link MTU advertisement receiving means for receiving an advertisement of a link MTU of a link connected to each node on a path from the correspondent node to the destination node;

Path MTU setting means for setting a Path MTU of the path from the correspondent node to the destination node, out of link MTUs received by the link MTU advertisement receiving means;

Path MTU discovery execution determining means for determining whether a discovery of a Path MTU

should be executed, on the basis of the Path MTU set by the Path MTU setting means; and

Path MTU announcing means for announcing the Path MTU set by the Path MTU setting means.

5 4. The node in the packet communication system according to Claim 2, wherein said destination node is a mobile node that can move in the packet communication system, and

 wherein the multiple tunnel entry-point advertisement receiving means determines that a mobility anchor point existing on the path from the correspondent node to the mobile node and managing local movement of the mobile node is an entry point of multiple tunnels.

15 5. The node in the packet communication system according to Claim 4, wherein the Path MTU discovery execution determining means determines whether the discovery of the Path MTU should be executed, based on the number of mobility anchor points existing on the path from the correspondent node to the mobile node.

20 6. The node in the packet communication system according to Claim 5, wherein the multiple tunnel entry-point advertisement receiving means determines that each mobility anchor point selected upon a movement of the mobile node to update the path is the entry point of multiple tunnels,

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wherein the Path MTU discovery execution determining means compares the number of mobility anchor points existing on the path from the correspondent node to the mobile node before the movement of the mobile node with that after the movement of the mobile node and determines that the discovery of the Path MTU should be executed, when the number of mobility anchor points before the movement is different from that after the movement,

wherein the Path MTU calculating means calculates the Path MTU according to $(\text{the Path MTU before the movement} - \text{a header length added at a mobility anchor point} \times (\text{the number of mobility anchor points after the movement} - \text{the number of mobility anchor points before the movement}))$, and

wherein the Path MTU announcing means announces the Path MTU calculated by the Path MTU calculating means, by a binding update message.

7. The node in the packet communication system according to Claim 4, wherein a mobility anchor point in an arbitrary layer existing on the path from the correspondent node to the mobile node sequentially announces information about a mobility anchor point in each layer announced by a mobility anchor point in a higher layer than the arbitrary layer and information of its own including a selection priority and layer

information, to a mobility anchor point in a lower layer than the arbitrary layer, and

5 wherein the multiple tunnel entry-point advertisement receiving means receives information about a mobility anchor point in each layer announced by a mobility anchor point in a lowest layer existing on the path from the correspondent node to the mobile node, from a connected node and selects a mobility anchor point in each layer on the basis of selection
10 priorities in the information about mobility anchor points.

8. The node in the packet communication system according to Claim 3, wherein the destination node is a mobile node that can move in the packet communication
15 system, and

wherein the link MTU advertisement receiving means retrieves a link MTU of each mobility anchor point existing on the path from the correspondent node to the mobile node and managing local movement of the
20 mobile node.

9. The node in the packet communication system according to Claim 8, wherein the link MTU advertisement receiving means retrieves a link MTU of each mobility anchor point existing on said path, from
25 an advertisement of the link MTU from the mobility anchor point,

wherein the Path MTU setting means sets a minimum link MTU among link MTUs of mobility anchor points retrieved by the link MTU advertisement receiving means, as a Path MTU,

5 wherein the Path MTU discovery execution determining means compares the Path MTU before the movement of the mobile node with that after the movement and determines that the discovery of the Path MTU should be executed, when the Path MTU before the
10 movement is different from that after the movement, and

 wherein the Path MTU announcing means announces the Path MTU set by the Path MTU setting means, by a binding update message.

10. A correspondent node in a packet
15 communication system comprised of nodes and links, said correspondent node transmitting a packet to the node as set forth in Claim 1,

 said correspondent node updating a Path MTU preserved in itself, based on the Path MTU announced by
20 said Path MTU announcing means.

11. The correspondent node in the packet communication system according to Claim 10, wherein the destination node is a mobile node that can move in the packet communication system, and

25 wherein upon a movement of the mobile node to update a connected node, the Path MTU preserved in the

correspondent node is updated on the basis of the Path MTU announced by the Path MTU announcing means, a packet size is changed based on the Path MTU thus updated, and a packet of the packet size thus changed is transmitted to the mobile node.

12. A mobility anchor point in a packet communication system comprised of nodes and links, said mobility anchor point being a mobility anchor point managing local movement of the mobile node as set forth in Claim 4,

said mobility anchor point announcing to a mobility anchor point in a lower layer existing on the path from the correspondent node to the mobile node, information about a mobility anchor point in each layer announced by a mobility anchor point in a higher layer existing on the path, and information of its own including a selection priority and layer information.

13. A mobility anchor point in a packet communication system comprised of nodes and links, said mobility anchor point being a mobility anchor point managing local movement of the mobile node as set forth in Claim 8, said mobility anchor point comprising:

link MTU announcing means for announcing a link MTU of a link connected to said mobility anchor point, to the mobile node.

14. The mobility anchor point in the packet

communication system according to Claim 13, wherein the link MTU announcing means announces the link MTU by adding the link MTU to an acknowledgement message to a binding update message transmitted from the mobile node.

15. A home agent in a packet communication system comprised of nodes and links, said home agent being a home agent managing global movement of the mobile node as set forth in Claim 4, said home agent comprising:

multiple tunnel entry-point determining means for determining whether said home agent is an entry point of multiple tunnels on the path from the correspondent node to the mobile node;

15 Path MTU calculating means for calculating a Path MTU of the path from the correspondent node to the mobile node, based on the number of entry points of multiple tunnels at the home agent; and

20 Path MTU announcing means for announcing the Path MTU calculated by the Path MTU calculating means, to the correspondent node.

16. The home agent in the packet communication system according to Claim 15, wherein the Path MTU calculating means recalculates the Path MTU, based on the Path MTU announced by the mobile node, and

wherein the Path MTU announcing means announces

the Path MTU calculated by the Path MTU calculating means, by an ICMP Packet Too Big message.

17. A home agent in a packet communication system comprised of nodes and links, said home agent being a home agent managing global movement of the mobile node as set forth in Claim 8, said home agent comprising:

on-path determining means for determining whether said home agent exists on the path from the correspondent node to the mobile node;

Path MTU setting means for setting a Path MTU of the path from the correspondent node to the mobile node, based on a link MTU of a link connected to the home agent; and

Path MTU announcing means for announcing the Path MTU set by the Path MTU setting means, to the correspondent node.

18. The home agent in the packet communication system according to Claim 17, wherein the Path MTU setting means sets a new Path MTU, based on the Path MTU announced by the mobile node, and

wherein the Path MTU announcing means sends an ICMP Packet Too Big message containing the Path MTU set by the Path MTU setting means, to the correspondent node.

19. A packet communication system comprised of

nodes and links, wherein a destination node as a destination of a packet transmitted from a correspondent node, comprises:

5 advertisement receiving means for receiving an advertisement of path information about a path from the correspondent node to the destination node;

Path MTU discovery execution determining means for determining whether a discovery of a Path MTU of the path from the correspondent node to the destination node should be executed, based on the path information;

10 Path MTU setting means for setting the Path MTU on the basis of the path information; and

Path MTU announcing means for announcing the Path MTU set by the Path MTU setting means, and

15 wherein the correspondent node updates a Path MTU preserved in itself, based on the Path MTU announced by the Path MTU announcing means.

20 20. A packet communication system comprised of nodes and links, wherein a destination node as a destination of a packet transmitted from a correspondent node, comprises:

multiple tunnel entry-point advertisement receiving means for receiving an advertisement of information about an entry point of multiple tunnels on a path from the correspondent node to the destination node;

Path MTU discovery execution determining means for determining whether a discovery of a Path MTU of the path from the correspondent node to the destination node should be executed, based on the number of entry points of multiple tunnels;

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Path MTU calculating means for calculating the Path MTU on the basis of the number of entry points of multiple tunnels; and

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Path MTU announcing means for announcing the Path MTU calculated by the Path MTU calculating means, and

wherein the correspondent node updates a Path MTU preserved in itself, based on the Path MTU announced by the Path MTU announcing means.

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21. A packet communication system comprised of nodes and links, wherein a destination node as a destination of a packet transmitted from a correspondent node, comprises:

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link MTU advertisement receiving means for receiving an advertisement of a link MTU of a link connected to each node on a path from the correspondent node to the destination node;

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Path MTU setting means for setting a Path MTU of the path from the correspondent node to the destination node, out of link MTUs received by the link MTU advertisement receiving means;

Path MTU discovery execution determining means

for determining whether a discovery of a Path MTU should be executed, based on the Path MTU set by the Path MTU setting means; and

Path MTU announcing means for announcing the Path MTU set by the Path MTU setting means, and

wherein the correspondent node updates a Path MTU preserved in itself, based on the Path MTU announced by the Path MTU announcing means.

22. A Path MTU discovery method at a destination node as a destination of a packet transmitted from a correspondent node in a packet communication system comprised of nodes and links, said method comprising:

an advertisement receiving step of receiving an advertisement of path information about a path from the correspondent node to the destination node;

a Path MTU discovery execution determining step of determining whether a discovery of a Path MTU of the path from the correspondent node to the destination node should be executed, based on the path information;

a Path MTU setting step of setting the Path MTU on the basis of the path information; and

a Path MTU announcing step of announcing the Path MTU set in the Path MTU setting step.

23. A Path MTU discovery method at a destination node as a destination of a packet transmitted from a correspondent node in a packet communication system

comprised of nodes and links, said method comprising:

5 a multiple tunnel entry-point advertisement
receiving step of receiving an advertisement of
information about an entry point of multiple tunnels on
the path from the correspondent node to the destination
node;

10 a Path MTU discovery execution determining step
of determining whether a discovery of a Path MTU of the
path from the correspondent node to the destination
node should be executed, based on the number of entry
points of multiple tunnels;

 a Path MTU calculating step of calculating the
Path MTU on the basis of the number of entry points of
multiple tunnels; and

15 a Path MTU announcing step of announcing the Path
MTU calculated in the Path MTU calculating step.

20 24. A Path MTU discovery method at a destination
node as a destination of a packet transmitted from a
correspondent node in a packet communication system
comprised of nodes and links, said method comprising:

 a link MTU advertisement receiving step of
receiving an advertisement of a link MTU of a link
connected to each node on a path from the correspondent
node to the destination node;

25 a Path MTU setting step of setting a Path MTU of
the path from the correspondent node to the destination

node, out of link MTUs received in the link MTU advertisement receiving step;

5 a Path MTU discovery execution determining step of determining whether a discovery of a Path MTU should be executed, on the basis of the Path MTU set in the Path MTU setting step; and

 a Path MTU announcing step of announcing the Path MTU set in the Path MTU setting step.